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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,356

09/28/2004

Jon E. Stanat

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5045

23455 7590 02/27/2007  
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EXAMINER

BULLOCK, IN SUK C

ART UNIT

PAPER NUMBER

1764

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/509,356

Applicant(s)

STANAT ET AL.

Examiner

In Suk Bullock

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/28/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

Claim 43 is objected to because of the following informalities: claim 43 is a duplicate of claim 36. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 6, 8-11, 16, 18-21, 36-38, and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,026,933 to Blain et al. (hereinafter "Blain").

Blain discloses a process for producing substantially linear hydrocarbons by oligomerizing a lower olefin at elevated temperature and pressure with a selectivated crystalline molecular sieve catalyst (Abstract). The crystalline molecular sieve catalyst used is ZSM-23 which is selectivated with 2,4,6-trimethyl pyridine (col. 5, lines 17-21). Blain also discloses oligomerizing either propylene, butene or a mixture thereof. The oligomers produced may be separated into fractions by conventional distillation separation. The average degree of branching ranges from 0.80 to 2.00. See col. 5, lines 26-61. Example XIV of the reference shows an oligomerization of 1-butene with a HZSM-23 catalyst which was treated with 2,4,6-collidine, operating temperature in the

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range of 180-205° C, pressure in the range of 520-540 psig, and WHSV in the range of 0.21-0.29. The example also shows the degree of branching for C<sub>8</sub> to C<sub>16</sub> from 0.96 to 1.34 (see Table 13). The reference further discloses that the olefin produced by the process may be used as is or may be blended with other olefins. One use for olefin oligomers is as alkylating agents in a process for the selective alkylation of an aromatic compound to produce phenylalkanes (col. 7, lines 3-17).

It is noted that Blain is silent with respect to the double bond structures. However, since the process of Blain is the same as the claimed process, it is expected that the oligomerization process of Blain would produce oligomer products having the same double bond structures as claimed.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, 7, 12-15, 17, 22-35, 39-42, and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,026,933 to Blain et al. (hereinafter "Blain") in view of EP 0 402 051 A2 (hereinafter "EP").

Blain discloses a process for producing substantially linear hydrocarbons by oligomerizing a lower olefin at elevated temperature and pressure with a selectivated crystalline molecular sieve catalyst (Abstract). The crystalline molecular sieve catalyst used is ZSM-23 which is selectivated with 2,4,6-trimethyl pyridine (col. 5, lines 17-21). Blain also discloses oligomerizing either propylene, butene or a mixture thereof. The oligomers produced may be separated into fractions by conventional distillation separation. The average degree of branching ranges from 0.80 to 2.00. See col. 5, lines 26-61. Example XIV of the reference shows an oligomerization of 1-butene with a HZSM-23 catalyst which was treated with 2,4,6-collidine, operating temperature in the range of 180-205° C, pressure in the range of 520-540 psig, and WHSV in the range of 0.21-0.29. The example also shows the degree of branching for C<sub>8</sub> to C<sub>16</sub> from 0.96 to

1.34 (see Table 13). The reference further discloses that the olefin produced by the process may be used as is or may be blended with other olefins. One use for olefin oligomers is as alkylating agents in a process for the selective alkylation of an aromatic compound to produce phenylalkanes (col. 7, lines 3-17).

The difference between Blain and the claimed invention is that Blain does not teach downstream processing of the recovered oligomers to produce other products, i.e., oxonation, hydrogenation, esterification, etherification, etc.

The EP reference discloses processes for preparation of saturated alcohol derivatives and their use in detergent; plasticizer; and synthetic lubricant formulations (page 2, lines 1-12). EP discloses using a selectivated ZSM-23 catalyst for oligomerization of propylene and/or butene to produce oligomers having an average degree of branching from 0.80 to 2.00, followed by hydroformylation (oxonation) of oligomer and esterification of the saturated alcohol. The products are used in detergents, plasticizers, and lubricants. The resultant alcohols can be esterified or etherified. See page 2, lines 33-47 and page 3, lines 4-42.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Blain and further process the recovered oligomers to produce valuable products as taught by the EP reference.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
I.B.

THUAN D. DANG  
PRIMARY EXAMINER

